

**Claims after this response:**

1(Currently Amended). A pointing device comprising:

an elongated body having a transparent end adapted for movement over a surface;

an illumination subsystem that illuminates said surface in an area adjacent to said transparent end;

an imaging subsystem that forms images of a portion of said surface in said area;

a reference mark system that defines a direction that is independent of the rotations of said elongated body and measures the orientation of said elongated body relative to said direction; and

a controller that periodically compares two of said images, said comparison depending on the amount by which said elongated body rotated between said images as determined from said orientation.

2(Currently amended). ~~The pointing device of Claim 1~~ A pointing device comprising:

an elongated body having a transparent end adapted for movement over a surface;

an illumination subsystem that illuminates said surface in an area adjacent to said transparent end;

an imaging subsystem that forms images of a portion of said surface in said area;

a reference mark system that defines a direction that is independent of the rotations of said elongated body; and

a controller that periodically compares two of said images, said comparison depending on the amount by which said elongated body rotated between said images.

wherein said reference mark system comprises:

a disk that is free to rotate about an axis through said disk, said disk comprising a reference mark that is displaced from said axis, said disk having an orientation mechanism that maintains said disk in a fixed orientation relative to the earth; and

a sensor for determining the location of said reference mark relative to said elongated body.

3(Original). The pointing device of Claim 2 wherein said orientation mechanism comprises a weight on said disk, said weight being displaced from said axis.

4(Original). The pointing device of Claim 2 wherein said orientation mechanism comprises a magnet attached to said disk.

5(Original). The pointing device of Claim 2 wherein said sensor comprises an optical system for projecting an image of said disk into said imaging subsystem.

6(Original). The pointing device of Claim 2 wherein said sensor comprises a reference mark sensor that measures the orientation of said disk relative to said elongated body.